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(54) Virtual databank objects

(57) A virtual databank object generated from one or more databanks, whereas said virtual databank object itself can be queried like any other databank, said method comprising:

a member definition module for defining a virtual databank object as a combination of one or more member databanks forming the constituents of said virtual databank, whereas said virtual databank object itself in its behaviour resembles a member databank and can be queried by a user query like one of the member databanks forming its constituents, whereas when said virtual databank object being queried by a user query its member databanks receive said user query and return a first result set, said virtual databank object further comprising;
a definition module for defining a query to be applied to said one or more member databanks which form the constituents of said virtual databank, said query when being executed returning a second result set formed by a subset of the entries of said one or more member databanks,

said definition module module further comprising a query link operator defining a boolean operation by which said first result set resulting from said user query to said virtual databank object and said second result set resulting from the query defined in said definition module are to be connected to thereby form a final result set, said final result set effectively being the result set resulting from a user query being directed to said virtual databank object to query said virtual databank object as if it were itself a databank like one of its member databanks.

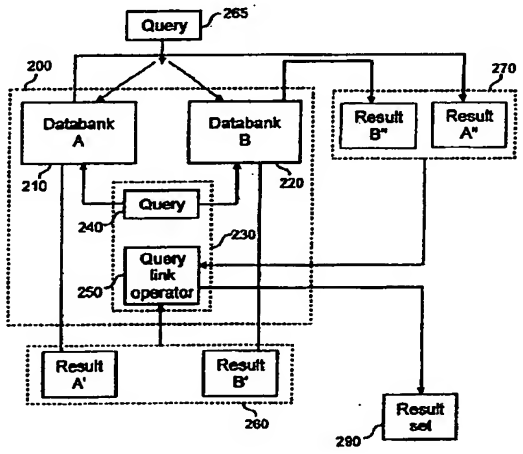

Fig. 2

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be easily linked using the Boolean link operator, for example by referring to the individual data set identifiers of the results in the two combined result sets 260 and 270. Those two combined result sets each contain a set of databank entries from databanks 210 and 220, and typically each of the databank entries has a unique identifier. Using this unique identifier any Boolean linking operation can perform on the two combined result sets to obtain the final result set.

[0072] It will readily apparent to the skilled person that the embodiments of the present invention as described before can be realized by a computer program running on a computer. In particular, a virtual databank object may be implemented by a computer program (or parts thereof), and a database management system or a retrieval system processing a virtual databank object can be implemented by means of a computer programm as well. Moreover, embodiments of the present invention may take the form of a computer program embodied in any storage medium or any carrier medium, such as a transmission link, an internet connection, a local area network connection, or the like. A computer on which such a computer program may be run can take the form of any general-purpose computer, such as commercially available personal computers, workstations, super computers, special-purpose computers, or the like.

[0073] The present invention is applicable to a hardware configuration like a personal computer or a work station as illustrated schematically in Figure 4A. The computer may comprise a central processing unit CPU 26, an input output I/O unit 21, an internal memory 22 and an external memory 24. The computer may further comprise standard input devices like a keyboard 23, a mouse 28 or a speech processing means (not illustrated).

[0074] The invention, however, may also be applied to a client-server configuration as illustrated in Figure 4B. The final result of a user query may be displayed on a display screen of a client device 60 while some or all steps of the method as illustrated before in connection with Figure 4 are carried out on one or more server computer accessible by a client device over a data network such as the internet using a browser application or the like.

Claims

1. A virtual databank object generated from one or more databanks, whereas said virtual databank object itself can be queried like any other databank, said method comprising:

   a member definition module for defining a virtual databank object as a combination of one or more member databanks forming the constituents of said virtual databank, whereas said virtual databank object itself in its behaviour resembles a member databank and can be queried by a user query like one of the member databanks forming its constituents, whereas when said virtual databank object being queried by a user query its member databanks receive said user query and return a first result set, said virtual databank object further comprising;
   a definition module for defining a query to be applied to said one or more member databanks which form the constituents of said virtual databank, said query when being executed returning a second result set formed by a subset of the entries of said one or more member databanks,
   said definition module module further comprising a query link operator defining a boolean operation by which said first result set resulting from said user query to said virtual databank object and said second result set resulting from the query defined in said definition module are to be connected to thereby form a final result set, said final result set effectively being the result set resulting from a user query being directed to said virtual databank object to query said virtual databank object as if it were itself a databank like one of its member databanks.

2. The virtual databank object of claim 1, wherein
   said constituents of said virtual databank are a plurality of member databanks, and wherein said query defined in said definition module returns those entries in one of said member databanks which contain a reference to entries in others than said one of said member databanks.

3. The virtual databank object of claim 1 or 2, wherein
   said query defined in said definition module returns those entries in said member databanks which match with one or more search criteria defining the query in said definition module.

4. The virtual databank object of one of the preceeding claims, wherein
   said query definied in said definition module selects a set of entries of said one or more member databanks according to their update time.

5. The virtual databank object of one of the preceeding claims, wherein
   said query definied in said definition module selects a set of entries of said one or more member databanks for

which a certain data field has a certain content.

6. The virtual databank object of one of the preceeding claims, wherein
said member databanks are biological or biochemical databanks and said query definied in said definition module selects a set of entries of said one or more member databanks which match with one or more biological search criteria.

7. The virtual databank object of one of the preceeding claims, wherein
said query defined in said definition module comprises a set of instructions in a programming language or a script language.

8. The virtual databank object of one of the preceeding claims, wherein
a plurality of queries are defined in said definition module, each of said plurality of said queries defining a different view onto said virtual databank object.

9. The virtual databank object of claim 8, wherein said different queries are assigned to different users of to different authorization or priority levels.

10. The virtual databank object of claim 9, wherein different users or different authorization levels are given access to different subsets of entries in said member databanks, thereby enabling a differentiated access to a virtual databank object depending on the user or the authorization level by of from which the virtual databank object is queried.

11. The virtual databank object of one of the preceeding claims, wherein
said member databanks are independent databanks which are indexed independently of each other, and wherein no index is built for the virtual databank object

12. A method for querying a virtual databank object according to one of the preceeding claims, said method comprising:

dispatching a user query to said virtual databank object;
delivering said query to the member databanks of said virtual databank object to carry out the query on said member databanks to thereby obtain a first result set;
combining said first result set with a second result set resulting from a query defined in a definition module, said combination being carried out based on a query link operator defined in said definition module, said query link operator defining a boolean relationship by which said first result set and said second result set are to be combined to thereby obtain a final result set, said final result set being the effective result which results from dispatching said user query to said virtual databank object.

13. The method of claim 12, further comprising the features as defined in one or a combination of claims 2 to 11.

14. The method of claim 12 or 13, wherein said query defined in said definition module is carried out in advance and said first result set is then stored to be retreived when it is to be combined with said second result set.

15. A computer program product comprising computer executable instructions which enable a computer to implement a virtual databank object according to one of claims 1 to 11 or to carry out a method according to one of claims 12 to 14.